Exposure to risk factors for the development of lower limb osteoarthritis from Army Officer Training

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Background and aims

Rates in the military of lower limb Osteoarthritis (OA) have been increasing over time.

Issues arising from OA are one of the most common causes for discharge from the military

The purpose of this study was to:

- determine the exposures to risk factors for development of lower limb OA during Army officer training.
- Compare to published minimum threshold exposures to establish a reasonably likely causal connection between development of lower limb OA and military service.

Methods

- A desktop analysis of the 18-month Army officer training was undertaken to identify frequencies and durations of exposures to selected physically demanding occupational tasks
- Observations of Army officer trainees during training days were undertaken to validate the desktop analysis
- Surveys of training officers were used to triangulate the program in the desktop analysis in relation to the training days observed
- A Job Exposure Matrix was developed using this data and compared to threshold exposures recognised by the Australian Repatriation Medical Authority's (RMA) Statements of Principles to be associated with increased risk of developing lower limb OA
- Ethics approvals were obtained from the Defence and Department of Veterans' Affairs Human Research Ethics Committee (Protocol number: 037-18) and the Bond University and Charles Sturt University Human Research Ethics Committee

Within **one year of service** Army officers could reach the cumulative thresholds for **lifting loads >20kg** and kneeling/squatting that increase **risk of developing lower limb OA**

In **4 years and 37 weeks** following commencement of service, Army Officers could reach the cumulative thresholds set under RMA's reasonable hypothesis scenario for **increased risk of lower limb OA** through carrying loads **>20kg**

Photo by SGT Cameron Pegg. Retrieved from http://images.defence.gov.au/S20201718

Results

Army officer trainees had a projected annual cumulative exposure of 1,621 hours of carrying loads >5kg and 135,219kg of lifting loads.

These trainees could reach the reasonable hypothesis scenario's threshold exposure specified by the RMA for increased risk of lower limb OA for carrying loads ≥20kg after approximately four years and 37 weeks of service and could reach the thresholds involving lifting loads ≥20kg and kneeling/squatting after one year of service.

Conclusion and implications

Training and employment as an Army officer exposes personnel to lifting and carrying of loads and kneeling/squatting tasks that are cumulatively likely to reach threshold levels associated with increased risk of developing lower limb OA within five years.

Lifting and carrying loads and kneeling and squatting postures are important to occupational tasks of army personnel but may increase risk of OA. Ways to reduce cumulative exposures should be developed to reduce risk of lower limb OA.

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